51. (Amended) The sensor package of claim 46 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide electrical isolation of the sensor package.

52. (Amended) The sensor package of claim 46 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide environmental protection for the sensor package.

54. (Amended) The method of claim 53 wherein the force sensing element has a thickness, wherein the housing includes a well and a shelf, wherein the shelf has a depth substantially matching the thickness of the force sensing element, and wherein the applying of the force sensing element to a housing part comprises applying the force sensing element to the housing part so that the shelf supports the force sensing element within the well.

REMARKS

Claims 30-57 remain in the application.

In sections 1 and 2 of the Office Action, the Examiner objected to the drawings in that they do not

show the coplanar relationship between the upper and lower housing surfaces as recited in independent claim 46. Independent claim 46 has been amended to overcome this objection.

In section 4 of the Office Action, the Examiner rejected claims 46-52 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner points to the recitation in independent claim 46 of a coplanar relationship between the upper and lower housing surfaces. Independent claim 46 has been amended to overcome this rejection.

In section 6 of the Office Action, the Examiner rejected claims 30-32 under 35 U.S.C. §103 as being unpatentable over the Ip patent in view of the Frederick patent or the Narita published EP application.

The Ip patent discloses a sensor/packaging arrangement in which a ceramic case 40 encloses and supports an acceleration sensor die 20. As can be seen from the drawings of the Ip patent, and as recognized by the Examiner, the Ip patent does not disclose or suggest that the upper surface of the acceleration sensor die 20 and the upper surface of the ceramic case 40 are coplanar. Therefore, the Examiner relies on the Frederick patent.

The Frederick patent discloses an ultrasonic intrusion transducer 26 is mounted on a front panel 28 of a junction box 22 by use of a threaded mounting 30. An acoustic decoupling material 32 such as foam rubber acoustically decouples the ultrasonic intrusion transducer 26 from the threaded mounting 30 and the remainder of the junction box 22. The threaded mounting 30 and the ultrasonic intrusion transducer 26 protrude beyond the front surface of plate 28 and into a hole in a rain shield 34. The threaded mounting 30 is held securely to the plate 28 by a nut 36. The front surface of the rain shield 34 is co-planar with the front surface of the ultrasonic intrusion transducer 26. Although the written description of the Frederick patent does not explicitly state that the front surface of the threaded mounting 30 is co-planar with the front surface of the ultrasonic intrusion transducer 26, Figure 4 depicts the front surfaces of the threaded mounting 30 and the ultrasonic intrusion transducer 26 as being is co-planar.

The Examiner states that one of ordinary skill in the art, in view of the Frederick patent, would have readily recognized the advantages and desirability of arranging the upper surface of the acceleration sensor die 20 and the upper surface of the ceramic case 40 to be

coplanar to more directly expose the acceleration sensor die 20 to the parameters being sensed.

However, an acceleration sensor die 20 senses acceleration. There is no need for the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 to be coplanar when sensing acceleration. Accuracy and reliability of the acceleration sensor die 20 do not depend on the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 being coplanar. Also, the Ip patent does not suggest any need for mounting the acceleration sensor die 20 in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

With respect to the Frederick patent, the relationship between the front surfaces of the ultrasonic intrusion transducer 26, the threaded mounting 30, and the rain shield 34, although not stated in the Frederick patent, is one of angular coverage of the ultrasonic energy that is transmitted and received by the ultrasonic intrusion transducer 26. Such considerations do not apply to the acceleration sensor die 20 and the ceramic case 40 disclosed in the Ip patent. Indeed, the Frederick patent does not suggest any considerations that would suggest a need to mount the acceleration sensor die

20 in the ceramic case 40 of the Ip patent so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

Accordingly, because there is no suggestion in the Ip patent, the Frederick patent, or elsewhere that the acceleration sensor die 20 should be mounted in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar, independent claim 30 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of the Frederick patent.

The Examiner also relies on the Narita published EP application. The Narita published EP application shows in Figure 7 an infrared filter 1 that is mounted in a case 7 so that the outwardly facing surfaces of the infrared filter 1 and the case 7 are apparently coplanar. An infrared sensor (not shown) is mounted within the case 7 so that the only light to which the sensor (not shown) is exposed is the infrared light passed by the infrared filter 7.

The Examiner states that one of ordinary skill in the art, in view of the Narita published EP application, would have readily recognized the advantages and desirability of arranging the upper surface of the

acceleration sensor die 20 and the upper surface of the ceramic case 40 to be coplanar to more directly expose the acceleration sensor die 20 to the parameters being sensed.

However, as discussed above, an acceleration sensor die 20 senses acceleration. There is no need for the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 to be coplanar when sensing acceleration. Accuracy and reliability of the acceleration sensor die 20 do not depend on the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 being coplanar. Also, the Ip patent does not suggest any need for mounting the acceleration sensor die 20 in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

With respect to the Narita published EP application, the infrared filter 1 forms a window that lets in only infrared light into the case 7. Such a consideration does not apply to the acceleration sensor die 20 and the ceramic case 40 disclosed in the Ip patent. Indeed, the Narita published EP application does not disclose any considerations that would suggest a need to mount the acceleration sensor die 20 in the ceramic

case 40 of the Ip patent so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

Accordingly, because there is no suggestion in the Ip patent, the Narita published EP application, or elsewhere that the acceleration sensor die 20 should be mounted in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar, independent claim 30 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of the Narita published EP application.

Because independent claim 30 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of either the Frederick patent or the Narita published EP application, dependent claims 31 and 32 likewise would not have been obvious to one of ordinary skill in the art over the Ip patent in view of either the Frederick patent or the Narita published EP application.

In section 7 of the Office Action, the Examiner rejected claims 44 and 45 under 35 U.S.C. §103 as being unpatentable over the Ip patent in view of the Frederick patent or the Narita published EP application and further in view of the Murakami patent.

The Murakami patent does not suggest any considerations that would suggest a need to mount the acceleration sensor die 20 in the ceramic case 40 of the Ip patent so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

Accordingly, because there is no suggestion in the Ip patent, the Frederick patent, the Narita published EP application, the Murakami patent, or elsewhere that the acceleration sensor die 20 should be mounted in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar, independent claim 30 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of the Frederick patent or the Narita published EP application and further in view of the Murakami patent. Because independent claim 30 is patentable over the Ip patent in view of the Frederick patent or the Narita published EP application and further in view of the Murakami patent, dependent claims 44 and 45 are likewise patentable over the Ip patent in view of the Frederick patent or the Narita published EP application and further in view of the Murakami patent.

In section 8 of the Office Action, the Examiner rejected independent claim 46 under 35 U.S.C. §103 as

being unpatentable over the Ip patent in view of the Narita published EP application.

The Examiner stated earlier in the Office Action that one of ordinary skill in the art, in view of the Narita published EP application, would have readily recognized the advantages and desirability of arranging the upper surface of the acceleration sensor die 20 and the upper surface of the ceramic case 40 to be coplanar to more directly expose the acceleration sensor die 20 to the parameters being sensed.

However, as discussed above, an acceleration sensor die 20 senses acceleration. There is no need for the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 to be coplanar when sensing acceleration. Accuracy and reliability of the acceleration sensor die 20 do not depend on the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 being coplanar. Also, the Ip patent does not suggest any need for mounting the acceleration sensor die 20 in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

With respect to the Narita published EP application, the infrared filter 1 forms a window that

lets in only infrared light into the case 7. Such a consideration does not apply to the acceleration sensor die 20 and the ceramic case 40 disclosed in the Ip patent. Indeed, the Narita published EP application does not suggest any considerations that would suggest a need to mount the acceleration sensor die 20 in the ceramic case 40 of the Ip patent so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar.

Accordingly, because there is no suggestion in the Ip patent, the Narita published EP application, or elsewhere that the acceleration sensor die 20 should be mounted in the ceramic case 40 so that the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 are coplanar, independent claim 46 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of the Narita published EP application.

It is noted that the Examiner refers to the infrared filter 1 as a sensor. However, as is clear from the description in the Narita published EP application, the infrared filter 1 is a filter and the actual sensor (not shown) is contained in the case 7 behind the infrared filter 1.

In section 9 of the Office Action, the Examiner rejected dependent claims 51 and 52 under 35 U.S.C. §103 as being unpatentable over the Ip patent in view of the Narita published EP application and further in view of the Murakami patent. However, as discussed above, the combination of the Ip patent, the Narita published EP application, and the Murakami patent does not suggest a coplanar relationship between the upper surfaces of the acceleration sensor die 20 and the ceramic case 40 disclosed in the IP patent. Accordingly, independent claim 46 is patentable over the Ip patent in view of the Narita published EP application and further in view of the Murakami patent, and dependent claims 51 and 52, therefore, are likewise patentable over the Ip patent in view of the Narita published EP application and further in view of the Murakami patent.

In section 10 of the Office Action, the Examiner rejected independent claim 53 under 35 U.S.C. §103 as being unpatentable over the Ip patent in view of the Frederick patent.

Independent claim 53 is directed to a method of packaging a force sensing element. The force sensing element has an outwardly facing element surface, and the outwardly facing element surface has an edge therearound.

According to the method, the force sensing element is applied to a housing part having an outwardly facing housing surface so that the edge of the outwardly facing element surface abuts an edge of the outwardly facing housing surface, and the force sensing element is attached to the housing part.

As the Examiner recognizes, the Ip patent does not show that the edge of the outwardly facing surface of the acceleration sensor die 20 abuts the edge of the outwardly facing surface of the ceramic case 40. Accordingly, the Examiner relies on the Frederick patent.

The Examiner states that one of ordinary skill in the art, in view of the Frederick patent, would have readily recognized the advantages and desirability of arranging the upper surface of the acceleration sensor die 20 and the upper surface of the ceramic case 40 so that the edge of the outwardly facing surface of the acceleration sensor die 20 abuts the edge of the outwardly facing surface of the ceramic case 40.

However, an acceleration sensor die 20 senses acceleration. There is no need for the edge of the outwardly facing surface of the acceleration sensor die 20 to abut the edge of the outwardly facing surface of the ceramic case 40 when sensing acceleration. Accuracy

and reliability of the acceleration sensor die 20 do not depend on the edge of the outwardly facing surface of the acceleration sensor die 20 abutting the edge of the outwardly facing surface of the ceramic case 40. Also, the Ip patent does not suggest any need for mounting the acceleration sensor die 20 in the ceramic case 40 so that the edge of the outwardly facing surface of the acceleration sensor die 20 abuts the edge of the outwardly facing surface of the ceramic case 40.

With respect to the Frederick patent, the relationship between the edges of the front surfaces of the ultrasonic intrusion transducer 26, the threaded mounting 30, and the rain shield 34, although not stated in the Frederick patent, is one of angular coverage of the ultrasonic energy that is transmitted and received by the ultrasonic intrusion transducer 26. Such considerations do not apply to the acceleration sensor die 20 and the ceramic case 40 disclosed in the Ip patent. Indeed, the Frederick patent does not suggest any considerations that would suggest a need to mount the acceleration sensor die 20 in the ceramic case 40 of the Ip patent so that the edge of the outwardly facing surface of the acceleration sensor die 20 abuts the edge of the outwardly facing surface of the ceramic case 40.

Accordingly, because there is no suggestion in the Ip patent, the Frederick patent, or elsewhere that the acceleration sensor die 20 should be mounted in the ceramic case 40 so that the edge of the outwardly facing surface of the acceleration sensor die 20 abuts the edge of the outwardly facing surface of the ceramic case 40, independent claim 53 would not have been obvious to one of ordinary skill in the art over the Ip patent in view of the Frederick patent.

In section 11 of the Office Action, the Examiner rejected dependent claim 54 under 35 U.S.C. §103 as being unpatentable over the Ip patent in view of the Frederick patent and further in view of the Narita published EP application. However, the combination of the Ip patent, the Frederick patent, and the Narita published EP application does not suggest an abutting edge relationship between the outwardly facing surfaces of the acceleration sensor die 20 and the ceramic case 40 disclosed in the IP patent. Accordingly, independent claim 53 is patentable over the Ip patent in view of the Frederick patent and further in view of the Narita published EP application, and dependent claim 54, therefore, is likewise patentable over the Ip patent in view of the Frederick patent and further in view of the

Narita published EP application the Narita published EP application.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE."**

In view of the above, it is clear that the claims of the present invention are patentable. Accordingly, allowance of these claims and issuance of this patent application are respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please amend the claims as follows:

30. (Amended) A sensor package comprising:

a housing having an upper housing surface and a well extending into the housing through the upper housing surface, wherein the upper housing surface [housing] defines a first plane; and,

a force sensing element having an upper element surface and a lower element surface, wherein the upper element surface defines a second plane, wherein the force sensing element is supported by the housing such that the lower element surface is within the well and such that the first and second planes are coplanar.

31. (Amended) The sensor package of claim 30 wherein the force sensing element has a thickness between the upper element surface and the lower element surface, wherein the housing includes a shelf, wherein the shelf supports the force sensing element within the well, and wherein the shelf has a depth with respect to the thickness of the force sensing element such that the

upper element surface and the upper housing surface are coplanar.

32. (Amended) The sensor package of claim 30 wherein the force sensing element has a thickness between the upper element surface and the lower element surface, wherein the housing includes a shelf, wherein the shelf supports the force sensing element within the well, and wherein the shelf has a depth substantially matching the thickness of the force sensing element.

33. (Amended) The sensor package of claim 32 wherein the housing has a connection pad within the well, wherein the force sensing element has a connection pad, and wherein the connection pads of the housing and the force sensing element are electrically coupled when the force sensing element is supported by the shelf of the housing.

34. (Amended) The sensor package of claim 33 wherein a conductive adhesive electrically couples the connection pads of the housing and the force sensing element.

35. (Amended) The sensor package of claim 34 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide electrical isolation of the sensor package.

36. (Amended) The sensor package of claim 34 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide environmental protection for the sensor package.

38. (Amended) The sensor package of claim 34 wherein the shelf is arranged to prevent the conductive adhesive from migrating around an edge of the force sensing element and causing the force sensing element to electrically short.

39. (Amended) The sensor package of claim 30 wherein the housing has a connection pad, wherein the force sensing element has a connection pad, and wherein the connection pads of the housing and the force sensing element are electrically coupled.

40. (Amended) The sensor package of claim 39 wherein a conductive adhesive electrically couples the connection pads of the housing and the force sensing element.

41. (Amended) The sensor package of claim 40 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide electrical isolation of the sensor package.

42. (Amended) The sensor package of claim 40 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide environmental protection for the sensor package.

44. (Amended) The sensor package of claim 30 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide electrical isolation of the sensor package.

45. (Amended) The sensor package of claim 30 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide environmental protection for the sensor package.

46. (Amended) A sensor package comprising:

a housing having an upper housing surface, a well extending into the housing through the upper housing surface, and a shelf; and,

a force sensing element having an upper element surface, wherein the force sensing element is supported by the shelf of the housing such that the force sensing element extends into the well, such that the upper housing surface and the [lower housing] upper element surface are coplanar, and such that the upper element surface and the upper housing surface face outwardly from the housing.

47. (Amended) The sensor package of claim 46 wherein the housing has a connection pad within the well, wherein the force sensing element has a connection pad, and wherein the connection pads of the housing and the force sensing element are electrically coupled together.

48. (Amended) The sensor package of claim 47 wherein a conductive adhesive electrically couples the connection pads of the housing and the force sensing element.

49. (Amended) The sensor package of claim 48 wherein the shelf is arranged to prevent the conductive adhesive from migrating around an edge of the force sensing element and causing the force sensing element to electrically short.

51. (Amended) The sensor package of claim 46 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide electrical isolation of the sensor package.

52. (Amended) The sensor package of claim 46 further comprising a membrane covering the upper surfaces of the housing and the force sensing element in order to provide environmental protection for the sensor package.

54. (Amended) The method of claim 53 wherein the force sensing element has a thickness, wherein the housing includes a well and a shelf, wherein the shelf has a depth substantially matching the thickness of the force sensing element, and wherein the applying of the force sensing element to a housing part comprises applying the force sensing element to the housing part so

that the shelf supports the force sensing element within the well.